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NOTES ON GEOGRAPHIC DISTRIBUTION

Occurence of *Elaphoidella grandidieri* (Guerne and Richard, 1893) (Crustacea: Copepoda: Harpacticoida) in Ciénaga Grande de Santa Marta, Colombia

Juan M. Fuentes-Reines [1*] and Evelyn Zoppi de Roa [2]

1 Universidad del Magdalena, Grupo de investigación en Limnología. A.A 731 Santa Marta, Magdalena, Colombia.
2 Universidad Central de Venezuela, Instituto de Zoología y Ecología Tropical, Facultad de Ciencias Laboratorio de Plancton. A.P. 47058 Caracas 1041A.
* Corresponding author. E-mail: *juanmanuelfuentesreines@yahoo.com*

ABSTRACT: The occurrence of *Elaphoidella grandidieri* (Guerne and Richard 1893) in Ciénaga Grande de Santa Marta, Colombia, is reported for the first time. The specimens are described and compared with literature data. The Colombian specimens are similar to those of previously described from Japanese populations, presenting strong spinulation of P2 exopod and absent inner seta on the first endopodal segment of P4. Nevertheless, this species presents some differences with the previous report. The present observations support the theory that *Elaphoidella grandidieri* might be a complex of species, reinforcing the necessity of a revision of the species.

Elaphoidella grandidieri (Guerne and Richard 1893) is considered a pantropical species (Gaviria and Aranguren 2007) originally described from Madagascar (Guerne and Richard 1893) and has also been recorded from Africa (Monard 1937; Chappuis 1938; Defaye 1988) and Japan, in Asia (Kikuchi 1985; Ishida 1990). In the American continent *Elaphoidella grandidieri* has been reported in Canada (Wilson 1975), Cuba and Guadeloupe (Dussart 1982; Reid 1990), United States (Reid and Ishida 1993; Williamson and Reid 2001), Brazil (Reid 1993; 1998), and México (Gutierrez-Aguirre *et al.* 2011). In Colombia, it was reported as personal observation (Gaviria and Aranguren 2007)

The present paper reports the occurrence of *Elaphoidella grandidieri* sampled from Ciénaga Grande de Santa Marta Magdalena-Colombia, during March-November 2009 in the mouth of Rio Sevilla (10°52'11.25" N and 74°19'31.64" W). The average deep was 0.6 m with pH range 7.1-7.2

The samples were collected among submerged macrophytes doing a vertical drag with a 25 L bucket. With the use of 45 µm mesh size plankton net, 500 ml samples were concentrated and fixed immediately with 4% formalin, the samples were brought to the laboratory where they were stained with bengal rose. The specimens were separated and embedded in lactic acid for posterior dissection and photographic processing. Individuals were measured in ventral position, from head to the caudal rami, using an ocular micrometer

Specimens were deposited at the Museo de Colecciones Biológicas de la Universidad del Atlántico, Barraquilla-Atlántico, Colombia (UARC78M).

The shape of the female is cylindrical (Figure 1A). The length ranges from 574 to 616 µm (n = 12). Short rostrum not surpassing the first segment of antennules (Figure 1B). Antennules with 8 segments (Figure 1C). Antenna with bisegmented allobasis, both segments almost equal in length (Figure 1D). Exopodal antenna represented by a single segment arising from the middle of basoendopodite, armed with four spinulose setae (Figure 1E). Ventral surface of anal somite with 1-1 long spinules on posterior margin (Figure 1F). Anal plate strongly convex, rounded, pectinate (Figure 1G). Caudal rami length 1.3 times its width (Figure 1H). Exopods of P1–P4 all 3-segmented, first leg with 3-segmented endopodite, P2–P4 with 2-segmented endopodite. Basis of P1 with a seta as long as the first segment of P1 (Figures 2A-E), setae formulae P1-P4 similar to that reported by Gutierrez-Aguirre *et al.* (2011).

Basal expansion of fifth leg is rectangular, armed with four setae, exopod posses a row of inner spinules, with three long terminal setae, two short setae and one small spine outer margin (Figure 2F).

The specimens of *Elaphoidella grandidieri* from Colombia presents the following characteristics: the ratio between the outer spine of P1 exp3 and last segment is 0.86; the ratio of terminal seta of P2 endopodite and last segment is 3.5; the spinulation of P2 expodite is strong; the inner seta on first endopodal segment of P4 is absent; the ratio between the length and width of P5 exp is 1.6; the ratio between the basoendopodite and exopodite inner seta of P5 is 1.8; the ratio between the outer lobe seta of P5 and exopodite is 2.08, the aesthetasc of fourth segment of antennules go beyond of the eight segment.

The Colombian specimens posses spines on the posteroventral margin of the anal somite; this character has only been reported by Chappuis (1938) in specimens collected from National Albert Park in the Congo-Africa, and Gutierrez-Aguirre *et al.* (2011) in specimens collected from ponds in central Mexico.

Elaphoidella grandidieri is similar to *E. bryophila* and key down to the latter species when following Wells (2007), an annotated checklist and keys to the species of

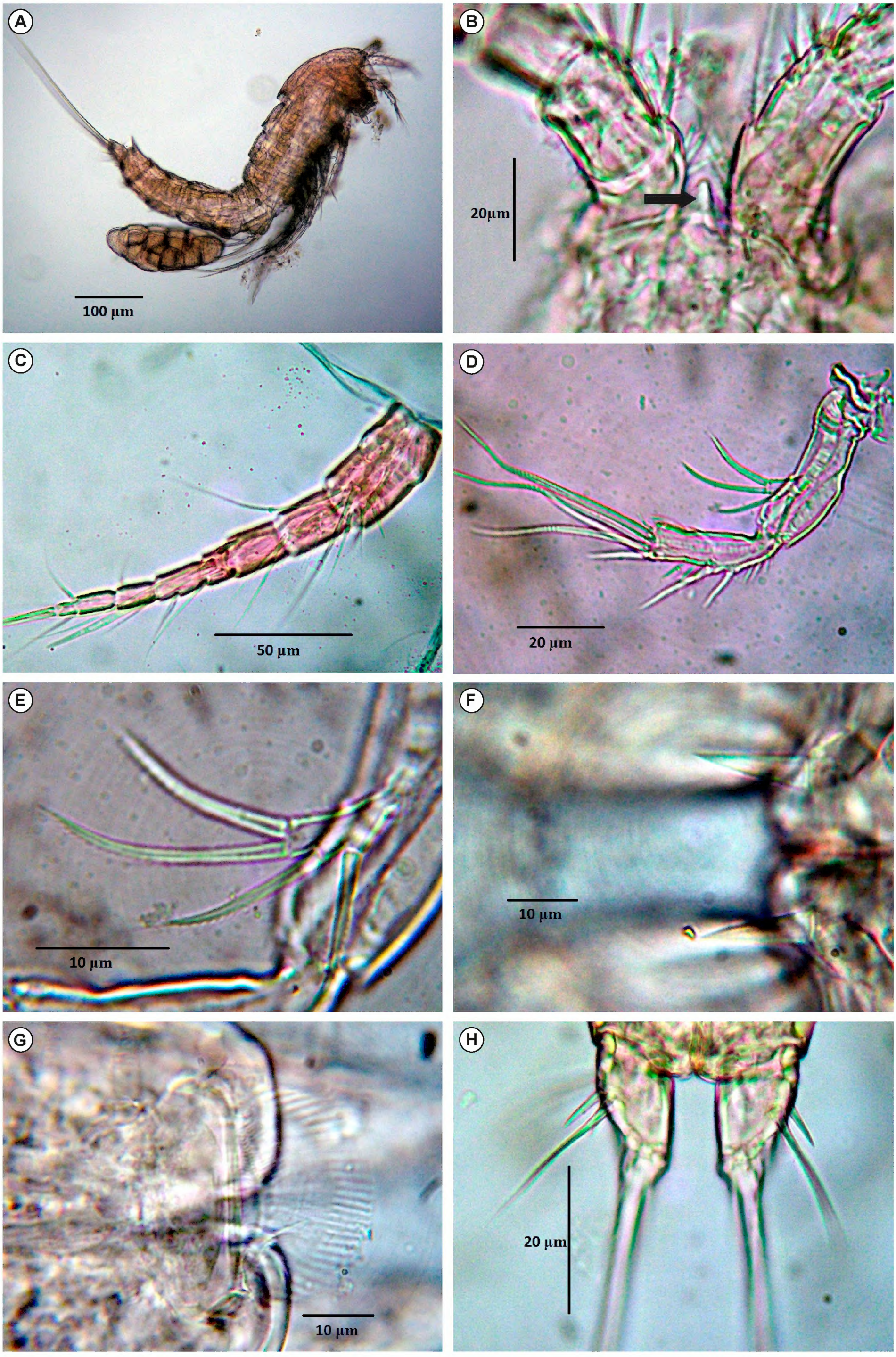

Figure 1. *Elaphoidella grandidieri*. Female. A. Adult. B. Rostrum C. Antennule. D. Antenna. E. Exopodal antenna. F. Spinules on posterior margin of anal somite. G. Anal plate. H. Caudal rami

Copepoda Harpacticoida (Crustacea) because both species share:

1) P2-P4 endopodal segment 2 with 5-6-4 setae,

2) P2-P4 endopodal segment 1with 1-1-1 setae

3) P5 endopod and exopod with 4-6 setae, among other characters.

Elaphoidella grandidieri can not be confused with E. *bryophila.* In the latter, the female P5 exopod is subcircular, larger in breadth than in length, and the caudal rami is about twice in length than in breadth, in contrast with *E. grandidieri* the female P5 exopod is ovoid, larger in length than in breadth and length of the caudal rami is about 1.3 -1.5 times its breadth.

The male has not been recorded. However, eight females were observed with eggs, and, as assumed from our data, *E. grandidieri* reproduces parthenogenetically. This fact have been documented by Nandini *et al.* (2011). Parthenogenesis has been observed only in a few species of harpacticoids such as *Elaphoidella bidens*, *Epactophanes richardi*, and *Canthocamptus staphylinus* (Sarvala 1979; Dole-Olivier *et al*. 2000).

The specimens of *Elaphoidella grandidieri* from Colombia are similar to those of Japanese populations reported by Kikuchi (1985) in the following characteristics: strong spinulation of P2 exp; absent inner seta on the first segment of P4 enp, in the ratio of terminal seta of P2 enp with the last segment and the ratio of length/width P5 exp. This species presents many differences with the reported species (Guttierrez-Aguirrez *et al.* 2011). For instance, the exopod of leg 5 is reported with four, five and six setae

Figure 2. Legs 1-5 of *Elaphoidella grandidieri*. Female. A. Leg 1. B. Seta on basis of leg 1. C. Leg 2. D. Leg 3. E. Leg 4. F. Leg 5

(Guerne and Richard 1893; Ishida 1990; Wells 2007). However, the outer edge structures has been considered as true setae or spines or as accessory spinules such that it is likely that the true variation is from 4-6 true setae and spines (Wells 2007). Another variable structure is the first endopodal segment of leg 4 reported with or without seta (Ishida 1990; Sars 1904; Kinkuchi 1985 and Gutierrez *et al.* 2011). This suggests that *Elaphoidella grandidieri* posses a high degree of variability in many characters and could belong to a species complex. However, further investigation is necessary to confirm that (Janetzky *et al.* 1996).

Literature Cited

Chappuis, P.A. 1938. Copépodes Harpacticoides. *Exploration du Parc National Albert, Mission H. Damas (1935-1936), Institut des Parcs Nationaux du Congo* 3: 1-19.

Defaye, D. 1988. Contribution à la connaissance des Crustacés Copépodes d'Ethiopie. *Hydrobiologia* 164: 103-147.

Dole-Olivier, M.J., D.M.P. Galassi, P. Marmonier and M. Creuzé Des Châtelliers. 2000. The biology and ecology of lotic microcrustaceans. *Freshwater Biology* 44:63-91

Dussart, B.H. 1982. Copépodes des Antilles francaises. *Revue d'Hydrobiologie Tropicale* 15: 313-324

Gaviria, S. and N. Aranguren. 2007. Especies de vida libre de la subclase Copepoda (Arthropoda, Crustacea) en aguas continentales de Colombia. *Biota Colombiana* 8: 53-68.

Guerne, M.J. de and J. Richard. 1893. *Canthocamptus grandidieri*, *Alona cambouei*, nouveaux Entomostracés d'eau douce de Madagascar. *Mémoires de la Société Zoologique de France* 6: 214-224.

Gutierrez-Aguirre, M., E. Suarez-Morales, A. Cervantes-Martínez, N. Sarma and S.S.S Sarma. 2011. Morphology of *Elaphoidella grandidieri* (Guerne and Richard, 1893) (Copepoda, Harpacticoida) from Mexico with notes on fecundity in culture conditions, p. 227-244 *In* D. Defaye E. Suarez-Morales and C. Von Vaupel Klein. (ed.). *Studies on Freshwater Copepoda: a Volume in Honour of Bernard Dussart*. Leiden: Koninklijke Brill.

Ishida, T. 1990. Copepods in the mountain waters of Kyushu, Tsushima and Ryukyu Islands, southwestern Japan. *Scientific Reports of the Hokkaido Salmon Hatchery* 44: 39-51.

Janetzky, W., R. Enderle and W. Noodt. 1996. Crustacea: Copépoda: Gelyelloida und Harpacticoida. *Susswasserfauna von Mitteleuropa* 8 (4/2): 1-228.

Kikuchi, Y. 1985. Redescription of a freshwater harpacticoid copepod, *Elaphoidella grandidieri* (Guerne and Richard, 1893), from a swamp at Itako, central Japan. *Publications of the Itako Hydrobiological Station* 2: 1-8.

Monard, A. 1937. Harpacticoïdes d'eau douce. Contribution à l'étude du plancton d'eau douce d'Angola. Archiv für Hydrobiologie 32: 486-487.

Nandini S., A.R. Nunez Ortiz and S.S.S. Sarma. 2011. *Elaphoidella grandidieri* (Harpacticoida: Copepoda): Demographic characteristics and possible use as live prey in aquaculture. *Journal of Environmental Biology* 32, 505-511

Reid, J.W. 1990. Continental and coastal free-living Copepoda (Crustacea) of Mexico, Central America and the Caribbean region, p. 175-213 *In* D. Navarro and J.G. Robinson (ed.). *Diversidad biológica en la Reserva de la Biósfera de Sian Ka'an, Quintana Roo, México*. Chetumal: Centro de Investigaciones de Quintana Roo and University of Florida.

Reid, J.W. 1993. The harpacticoid and cyclopoid copepod fauna in the Cerrado Region of central Brazil. 1. Species composition, habitats and zoogeography. *Acta Limnologica Brasiliensia* 6: 56-68.

Reid, J.W. 1998. Maxillopoda-Copepoda Harpacticoida, p 75-127 *In* P.S. Young (ed.). *Catalogue of Crustacea of Brazil*. Brazil: Museu Nacional Rio de Janeiro.

Reid, J.W. and T. Ishida. 1993. New species and records of the genus *Elaphoidella (*Crustacea: Copepoda: Harpacticoida) from the United States. *Proceedings of the Biological Society of Washington* 106: 137-146.

Sars, G.O. 1904. Pacifische Plankton-Crustaceen. *Zoologische Jahrbücher* 5: 629-646.

Sarvala, J. 1979. A parthenogenetic life cycle in a population of *Canthocamptus staphylinus* (Copepoda, Harpacticoida). *Hydrobiologia* 62: 113-129.

Williamson, C.E. and J.W. Reid. 2001. Copepoda, p. 915-954 *In* J.H. Thorpe and A.P. Covich (ed.). *Ecology and classification of North American freshwater invertebrates*. San Diego: Academic Press.

Wilson, M.S. 1975. North American harpacticoid copepods II. New records and species of *Elaphoidella* (Canthocamptidae) from the United States and Canada. *Crustaceana* 28: 125-138.

Wells, J.B.J. 2007. An annotated checklist and keys to the species of Copepoda Harpacticoida (Crustacea). *Zootaxa* 1568, 1-872.

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